

CLAIMS

What is claimed is:

5 1. A method for carrying out soft handoff of a mobile station from a first base station to a second base station both served by a wireline subnet having a link layer different than the link layer of the wireless network serving the mobile station, the method comprising

10 storing a shadow address in the first base station and the second base station, the shadow address corresponding to the mobile station and having a format compatible with the link layer of the wireline subnet,

 transmitting a frame containing the packet from the sending device over the wireline subnet using the shadow address as the link layer destination address of the packet, and

15 concurrently processing the frame in the mobile station as received from the first base station and the second base station.

 2. The method as recited in claim 1 wherein the storing includes assigning the shadow address by the first base station.

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 3. The method as recited in claim 2 wherein the transmitting includes communicating the shadow address from at least one of the base stations to the sending device in response to an address resolution request by the sending device.

4. The method as recited in claim 1 further comprising, after the transmitting, simultaneously sending the packet, using a link layer frame compatible with the link layer of the wireless network, from both the first base station and the second base station to the mobile station.

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5. The method as recited in claim 1 wherein the mobile station has an IP layer address and the storing includes storing the IP layer address, the shadow address, and the wireless link layer address as entries in a watch list for the mobile station.

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6. The method as recited in claim 1 further comprising, prior to the storing, sending the shadow address from the first base station to the mobile station and storing the shadow address in the mobile station.

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7. The method as recited in claim 6 further comprising, after the sending, transmitting the shadow address to the second base station from the mobile station.

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8. The method as recited in claim 6 further comprising, after the sending, transmitting the shadow address to the second base station from the mobile station as part of a standard message to register the mobile station with the second base station during roaming.

9. A method for servicing a mobile station homing on a first base station and roaming to a second base station both served by a wireline subnet having a link layer

different than the link layer of the wireless network serving the mobile station, the method comprising

assigning a shadow address to a mobile station by the first base station, the shadow address having the same format as the link layer address of the subnet,

5 sending a request from the mobile station to associate with the second base station, the request including the shadow address, and

associating the mobile station with the second base station with reference to the shadow address.

10 10. The method as recited in claim 9 further comprising, after the sending, negotiating between the first base station and the second base station a replacement shadow address if the shadow address assigned by the first base station conflicts with a pre-existing shadow address handled by the second base station.

15 11. A method for servicing a mobile station homing on a first base station and roaming to a second base station both served by a wireline subnet having a link layer different than the link layer of the wireless network serving the mobile station, the method comprising

20 assigning a shadow address to a mobile station by the first base station, the shadow address having the same format as the link layer address of the subnet,

sending a request from the mobile station to associate with the second base station,

sending a message over the subnet from the second base station to locate the first base station having the assigned shadow address, and

responding to the message by the first base station with the shadow address.

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12. The method as recited in claim 11 further comprising, after the sending, negotiating between the first base station and the second base station a replacement shadow address if the shadow address assigned by the first base station conflicts with a pre-existing shadow address handled by the second base station.

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13. A method for carrying out IP layer soft handoff of a mobile station from a first base station to a second base station both served by a wireline subnet having a link layer different than the link layer of the wireless network serving the mobile station, the method comprising

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assigning a shadow address to the mobile station, the shadow address corresponding to the mobile station and having a format compatible with the link layer of the wireline subnet,

storing the shadow address in both the first base station and the second base station,

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communicating the shadow address from at least one of the stations to the sending device in response to a address resolution request by the sending device,

transmitting a frame containing the packet from the sending device over the wireline subnet to both the first base station and the second base station using the shadow address as the link layer destination address of the packet,

propagating the packet from the first base station to the mobile station
5 using the IP layer of the wireless network, and concurrently propagating the packet from the second base station using the IP layer of the wireless network, and
concurrently processing the packet as receive from the first base station and the packet as received from the second base station in the mobile station.

10 14. The method as recited in claim 13 wherein the mobile station has an IP layer address and the storing includes storing the IP layer address, the shadow address, and the wireless link layer address as entries in a watch list for the mobile station.

15 15. The method as recited in claim 14 wherein the address resolution request includes the IP layer address of the mobile station and the communicating includes looking up the shadow address in the watch list corresponding to the IP layer address of the mobile station and sending the shadow address in response to the address resolution request.

20 16. The method as recited in claim 13 wherein the propagating the packet from the first base station includes removing the packet from the wireline frame, passing the packet to the IP layer of the first base station, encapsulating the packet as a link layer

wireless frame, and propagating the link layer wireless frame over a radio channel coupling the first base station with the mobile station.

17. The method as recited in claim 13 wherein the propagating the packet from the second base station includes removing the packet from the wireline frame, passing the packet to the IP layer of the second base station, encapsulating the packet as a link layer wireless frame, and propagating the link layer wireless frame over a radio channel coupling the second base station with the mobile station.

18. The method as recited in claim 13 wherein the propagating the packet from the first base station includes removing the packet from the wireline frame, passing the packet to the IP layer of the first base station, encapsulating the packet as a link layer wireless frame, and propagating the link layer wireless frame over a radio channel coupling the first base station with the mobile station, and wherein the propagating the packet from the second base station includes removing the packet from the wireline frame, passing the packet to the IP layer of the second base station, encapsulating the packet as a link layer wireless frame, and propagating the link layer wireless frame over a radio channel coupling the second base station with the mobile station.

19. Circuitry for carrying out soft handoff of a mobile station from a first base station to a second base station both served by a wireline subnet having a link layer different than the link layer of the wireless network serving the mobile station, the circuitry comprising

a storage device for storing a shadow address in the first base station and the second base station, the shadow address corresponding to the mobile station and having a format compatible with the link layer of the wireline subnet,

- 5 a receiver for receiving a frame containing the packet transmitted from the sending device over the wireline subnet to both the first base station and the second base station using the shadow address as the link layer destination address of the packet, and
- a processor for concurrently processing the frame as received from the first base station and the frame as received from the second base station in the mobile station.